

**WE CLAIM AS OUR INVENTION:**

1. A monochromator for use with an X-ray radiator that emits X-rays having a spectral composition, said monochromator comprising:  
a crystal having a property of spectrally restricting X-rays; and  
a positioning device connected to said crystal to move said crystal relative to the X-rays emitted by said X-ray radiator to change the spectral composition of the X-rays.
2. A monochromator as claimed in claim 1 wherein said positioning device moves said crystal to alter an angle between at least a portion of said X-rays and said crystal.
3. A monochromator as claimed in claim 1 wherein said positioning device moves said crystal into and out of a path of said X-rays.
4. A monochromator as claimed in claim 1 comprising a control device connected to said positioning device for automatically controlling said positioning device to control movement of said crystal.
5. A monochromator as claimed in claim 4 wherein said crystal spectrally restricts said X-rays to produce spectrally restricted X-rays, having an energy spectrum with a maximum value, and wherein said control device allows setting of said maximum value and controls said positioning device dependent on the maximum value that has been set.

6. A monochromator as claimed in claim 4 wherein said X-rays emitted by said X-ray radiator have an energy spectrum with a first maximum value, and wherein said crystal spectrally restricts said X-rays emitted by said X-ray radiator to produce spectrally restricted X-rays having an energy spectrum with a second maximum value, and wherein said control device allows setting of a factor between said first maximum value and said second maximum value and controls said positioning device dependent on said factor that has been set.

7. A monochromator as claimed in claim 6 wherein said control device allows setting of said factor in a range between 0.3 and 0.8.

8. A monochromator for use with an X-ray radiator that emits X-rays having a spectral composition, said X-ray radiator having an operating voltage associated therewith, said monochromator comprising:

- a crystal having a property of spectrally restricting X-rays;

- a positioning device connected to said crystal to move said crystal relative to the X-rays emitted by said X-ray radiator to change the spectral composition of the X-rays; and

- a control device connected to said positioning device for automatically controlling said positioning device to control movement of said crystal dependent on said operating voltage.

9. An X-ray device comprising:

- an X-ray radiator that emits X-rays having a spectral composition; and

a monochromator comprising a crystal having a property of spectrally restricting X-rays, and a positioning device connected to said crystal to move said crystal relative to the X-rays emitted by said X-ray radiator to change the spectral composition of the X-rays.

10. An X-ray device as claimed in claim 9 wherein said positioning device moves said crystal to alter an angle between at least a portion of said X-rays and said crystal.

11. An X-ray device as claimed in claim 9 wherein said positioning device moves said crystal into and out of a path of said X-rays.

12. An X-ray device as claimed in claim 9 comprising a control device connected to said positioning device for automatically controlling said positioning device to control movement of said crystal.

13. An X-ray device as claimed in claim 12 wherein said crystal spectrally restricts said X-rays to produce spectrally restricted X-rays, having an energy spectrum with a maximum value, and wherein said control device allows setting of said maximum value and controls said positioning device dependent on the maximum value that has been set.

14. An X-ray device as claimed in claim 13 wherein said X-rays emitted by said X-ray radiator have an energy spectrum with a first maximum value, and wherein said crystal spectrally restricts said X-rays emitted by said X-ray radiator to

produce spectrally restricted X-rays having an energy spectrum with a second maximum value, and wherein said control device allows setting of a factor between said first maximum value and said second maximum value and controls said positioning device dependent on said factor that has been set.

15. An X-ray device as claimed in claim 14 wherein said control device allows setting of said factor in a range between 0.3 and 0.8.

16. An X-ray device comprising:  
an X-ray radiator that emits X-rays having a spectral composition, said X-ray radiator having an operating voltage associated therewith; and  
a monochromator comprising a crystal having a property of spectrally restricting X-rays, a positioning device connected to said crystal to move said crystal relative to the X-rays emitted by said X-ray radiator to change the spectral composition of the X-rays, and a control device connected to said positioning device for automatically controlling said positioning device to control movement of said crystal dependent on said operating voltage.